ATTACHMENT J.4.64

SILOS 1 AND 2 OPERATIONAL SAFETY REQUIREMENTS

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Silos 1 and 2
Operational Safety Requirements

Environmental Remedial Action Project
Fernald Environmental Management Project
Fernald, Ohio

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Operable Unit 4

PARSONS

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Silos 1 and 2 Removal Action
Operational Safety Requirements
for
Operable Unit 4

APPROVED FOR ISSUE

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SILOS 1 AND 2
OPERATIONAL SAFETY REQUIREMENTS
OPERABLE UNIT 4

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1.0 INTRODUCTION

The Operational Safety Requirements (OSRs) presented in this document are applicable to the K-65 Silos, the Radon Treatment System (RTS) located just north of the K-65 Silo 2, and the bentonite mixing/delivery system. The OSRs were developed as a result of the analyses and data reported in Sections 4, 10, and 11 of the baseline PARSONS' 1991 Facility Safety Analysis Report (SAR); Section 9 of PARSONS' 1991 K-65 Removal Action Safety Assessment (SA); and the existing OSRs for the K-65 Silos (WMCO: R:AEC: 90-0032). The Safety Limits (SL), Limiting System Safety Settings (LSSS), Limiting Conditions for Operation (LCO), Design Features, and Administrative Controls are presented.

The K-65 Silos and RTS are simplistic structures used for the storage of K-65 residues as described in the SA and baseline SAR. The bentonite delivery system presents standard industrial hazards. Due to the low hazard classification of the facilities, the OSRs associated with the facility are simplistic and are not as extensive as those found for complex operations or for moderate or high hazard facilities.

The removal action for Silos 1 and 2 is intended to reduce the radon gas evolution from the residue surface. This project will achieve radon reduction by placing a 1 foot minimum bentonite slurry over the residues to attenuate the radon leaving the surface. In addition to reducing the radon emanation, the bentonite cover will reduce the gamma dose rate at the silo dome surface and provide additional protection to the residues in the event of a partial dome collapse or tornado event. The activities and systems associated with the removal action are in a Low Hazard Facility Classification.

The OSRs set the minimum acceptable system and operating limits required for operation to begin or continue. The OSRs must be met to ensure that the possibility of the accident and release scenarios evaluated in the Safety Assessment and Facility SAR are minimized.

The surveillance requirements (if any) associated with each OSR are described immediately following the OSR. This format and content is in accordance with DOE/OR-901 and DOE Order 5480.5.

2.0 DEFINITION OF TERMS

Bentonite System - the system used to mix and deliver the bentonite slurry to the silos including the process water truck, bentonite supply truck, control room, and support crane.

Design Features - characteristics of the design pertinent to the physical barriers and maintenance of safety margins in the design.

Limiting Conditions for Operation (LCO) - the minimum acceptable conditions that must be met in order to initiate or continue operations.

Limiting Safety System Setting (LSSS) - safety system actuation limits that represent a value within the range of the safety limits that allows adequate time for response and above normal operating values to prevent spurious actions.

Low Hazard Facility Classification - those operations which present minor on-site and negligible off-site impacts to the people or the environment.

Safety Assessment (SA) - a brief, factual, and objective document which determines if activities involve hazards that require elimination, control, or mitigation, thereby establishing the need for a safety analysis.

Safety Limits (SL) - a value outside the acceptable range which, if not met, may result in system failure and unacceptable risk levels to workers or the general public.

Surveillance Requirements - requirements established to ensure that SLs, LSSSs, and LCOs are not exceeded.

3.0 SAFETY LIMITS

The purpose of this section is to present the safety limits associated with the K-65 Silos, RTS, and bentonite system.

3.1 Load Limit on the Silo Dome Center Section

This SL applies to the original concrete 20-foot diameter center section of the silo dome that is capped by a plywood and steel frame protective cover. The objective is to prevent the possibility of a partial dome collapse. It has been determined that the 20-foot diameter center section of each silo is structurally inadequate (see Section 4 of the baseline SAR); thus it cannot support any load.

There shall be no live or dead load applied to the original concrete 20-foot diameter center section of either silo dome at any time.

The Facility Owner is responsible for ensuring that the conditions of this SL are met.

3.2 Load Limit on the Silo Dome Outer Section

This SL applies to the silo dome except for the original concrete 20-foot diameter center section. The objective is to prevent a partial or total dome collapse. This SL protects the public and the workers involved with any activities associated with the silo dome. It has been recommended (see Section 4 of the baseline SAR) that a concentrated live load shall be limited to 700 pounds or three persons.

There shall be no live load greater than 700 pounds and/or three persons applied to the dome and the plywood and steel frame protective dome cover of either silo. The load to be placed on the silo dome surface shall be measured or estimated by calculation (as appropriate) prior to activities on a silo dome.

The uncertainty associated with this SL is unknown; therefore, safety nets have been installed to protect the workers.

The Facility Owner is responsible for ensuring that the conditions of this SL are met.

3.3 Load Limit for the Crane

This SL applies to the boom crane used to support the distributor/sprayhead assembly and suspended platform (see Figure 3-1). The objective is to prevent the possibility of a crane failure, which could lead to a full or partial dome collapse and a subsequent release of radionuclides from the silos. The possibility of personnel injury as a result of the crane failure shall also be minimized.

The crane shall be capable of withstanding a minimum load of 20,550 pounds during normal lifting conditions (not to exceed 130-foot lifting radius with 180-foot boom). This SL is based on the estimated maximum expected load and the use of the crane to support people on the platform. It is intended to prevent the effects of a partial or full dome collapse. The effects of a dome collapse are discussed in the Final Safety Assessment, Section 9.1.2.

The Facility Owner is responsible for ensuring that the conditions of this SL are met.

3.4 Load Limit on the Plywood and Steel Frame Protective Cover

This SL applies to the plywood and steel frame protective cover over the 20-foot diameter center section of the silo dome. The objective is to comply with the criteria for using the suspended platform from Section 9.1.2 of the Final Safety Assessment.

There shall be no live load applied to the plywood and steel frame protective cover over the 20-foot diameter center section of either silo dome.

The Facility Owner is responsible for ensuring that the conditions of this SL are met.

3.5 Acceptable Temperature Limits for the Containment Bag

This SL applies to the plastic containment bags used to bag-in-bag-out for access to the open manhole. The objective of this SL is to prevent a possible failure of the containment bag due to low ambient temperatures.

The plastic containment bag shall be capable of performing its function in the range of 0 to 130 degrees F. Based on this condition, the minimum ambient temperature acceptable for operations shall be 0 degrees F. The maximum ambient temperature acceptable for operations shall be 130 degrees F.

Process Flow Diagram

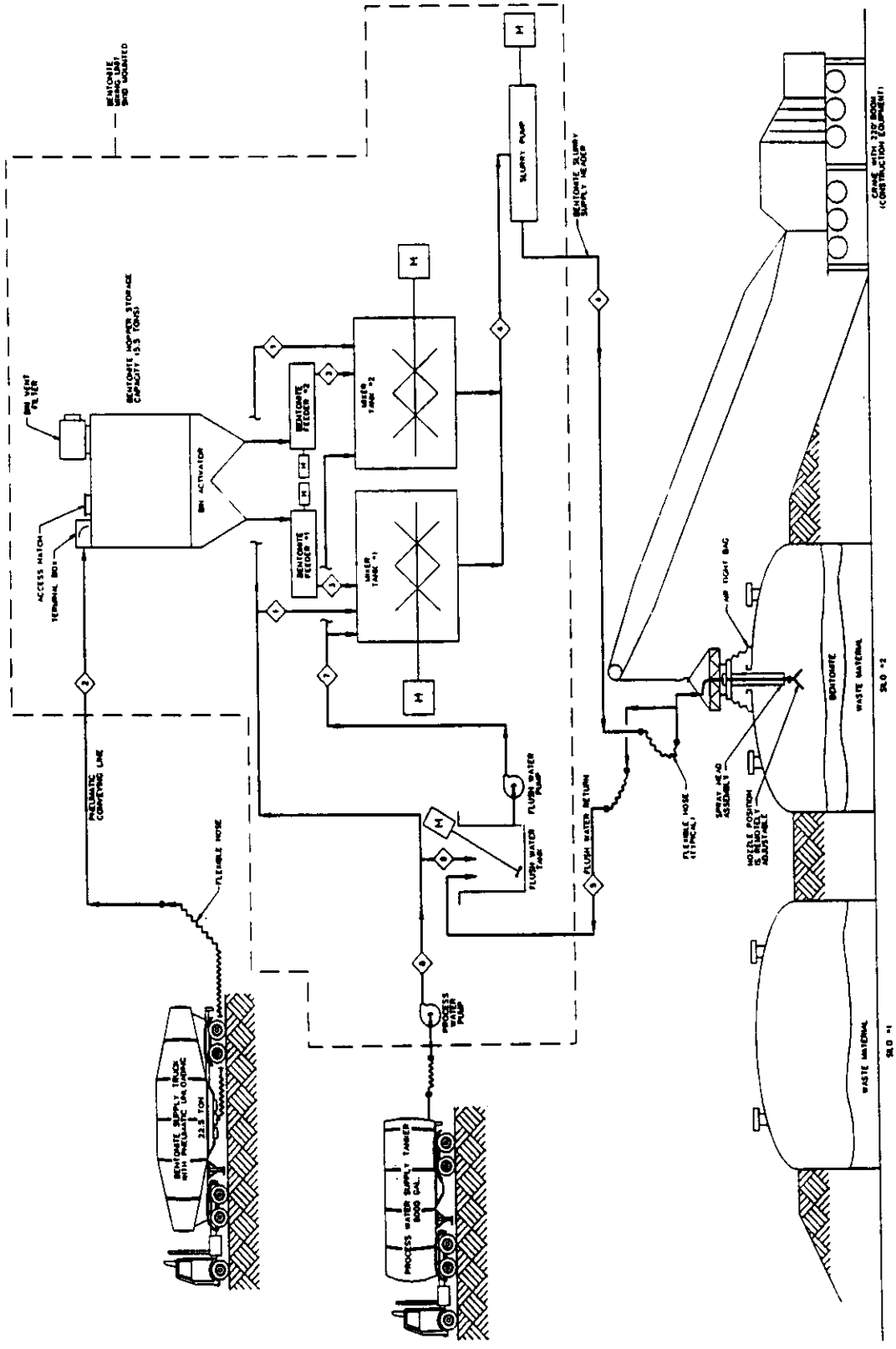

Figure 3-1 - Process Flow Diagram (From Drwg. No. 94X5900F00001, Sht. F001)

The Facility Owner is responsible for ensuring that the plastic used in the construction of the containment bag is capable of performing in the ambient temperature range stated above. In addition, the Facility Owner is responsible for monitoring the ambient air temperature during operations to ensure that the SL is not exceeded.

The Facility Owner is responsible for ensuring that the conditions of this SL are met.

3.6 Individual Dose Limits

Individual Dose Limits shall not exceed the DOE individual dose limit of 5 rem per year or the FEMP site individual dose limit of 3 rem per year. Individual exposure shall be determined from Self-Reading Pocket Dosimeters (SRPD) and Thermoluminescent Dosimeters (TLD) worn at the K-65 area and the individual historical records of exposure.

3.7 RTS Access

Access to the RTS shall not be allowed under any circumstances for 8 days after the last operation of this system except when the RTS is operated for maintenance activities in which the maximum potential radon inventory available for trapping is less than 25 percent of the radon available for dome pumpdown. These maintenance activities must be approved by Radiological Safety or the Radiation Safety Technician (RST) Supervisor. Access to the RTS shall be restricted for 30 days after the last operation. Access to this equipment after the eighth day and through the thirtieth day or for entry under the exception stated above shall be by issuance of a Radiation Work Permit (RWP) by an RST or RST Supervisor.

The 30 day access restriction to the radon reduction equipment is to prevent operator exposure to direct gamma radiation from the radon and radon daughters trapped on the activated charcoal filters. Thirty days is approximately seven half-lives of Radon-222 which will reduce the initial radon and radon daughter inventory to approximately 0.8 percent. The 8 day complete non-access period is about two Radon-222 half-lives and will reduce this initial radon inventory to 25 percent; however, this access will be under the authority of a special RWP with restrictions specific to that permit.

This quantity of radon in the activated carbon filters shall be estimated by calculations.

3.8 Crane Operations During Windy Conditions

This SL applies to the crane any time a part of the crane is suspended over the K-65 silos. The objective of this SL is to permit the safe operation of the crane and to steady the platform and sprayhead assembly while it is suspended above the silo dome. This action is to prevent the sprayhead assembly from coming in contact with the silo dome and possibly causing a dome collapse.

The maximum acceptable wind speed (sustained or gusts) for continued operations is 20 mph. Operations shall cease and the boom shall be relocated from the silo dome if the wind speed exceeds or is expected to exceed 20 mph.

The wind speed, direction, and potential for wind fronts approaching the site shall be monitored by contact with the National Weather Service and local weather monitoring stations.

The Facility Owner is responsible for ensuring that the conditions of this SL are met.

3.9 BentoGrout Amount

The addition of BentoGrout material shall not exceed 1,145 tons per silo. This is based on Camargo's 1989 study that evaluated the addition of 4 feet of wet sand to the silos. (The current plan is to add 537 tons of BentoGrout to Silo 1 and 591 tons to Silo 2).

The amount shall be measured.

4.0 LIMITING SAFETY SYSTEM SETTINGS

No Limiting Safety System Settings (LSSSs) for the silos and/or RTS are defined.

5.0 LIMITING CONDITIONS FOR OPERATION

The purpose of this section is to present the Limiting Conditions for Operation (LCO).

5.1 Weight Load Limit of the Crane

This LCO applies to the crane whenever it is used to support personnel. The objective of this LCO is to prevent any forces from being placed on the silo domes within 10 feet of the center.

The maximum load placed on the crane during normal lifting conditions (not to exceed 130-foot lifting radius with a 180-foot boom) shall not exceed 10,275 pounds. This weight is based on the crane's maximum acceptable load of 20,550 pounds and applies a safety margin of two as specified in 29 CFR 1926.550. The additional safety margin is required because the crane will support personnel.

Each load shall be measured (or calculated), as appropriate, to ensure that no load exceeds 10,275 pounds. The crane shall be inspected and tested in accordance with the requirements of the DOE

Hoisting Manual for a high consequence lift, per DOE Order 5480.4, 29 CFR 1926.550, and 29 CFR 1910.180. The maximum lifting radius shall not exceed 130 feet with a 180-foot boom.

The Facility Owner is responsible for ensuring that the conditions of this SL are met.

5.2 Wind Conditions Acceptable for System Operation

This LCO applies to the crane any time a part of the crane is suspended over the K-65 silos. The objective of this LCO is to permit the safe operation of the crane and to steady the platform and sprayhead assembly while suspended above the silo dome. This action is to prevent the sprayhead assembly from coming in contact with the silo dome and possibly causing a dome collapse.

The weather forecast must be obtained 3 days in advance to establish that proper conditions are expected for crane operations. In addition, contact with the National Weather Service will be established prior to beginning operation of the bentonite slurry delivery system. The information from the National Weather Service is required for notice of wind speed conditions in advance of their arrival. Due to the length of time required to bag-in-bag-out from the silo manway, it is necessary to have at least 2 hours advance notice of possible threatening weather conditions.

The maximum sustained (greater than 10 minutes in duration) wind speed acceptable for the initiation of operations is 12 mph. In case the system is already operating, the effect of the wind on the system stability should be assessed, if the sustained wind speed is greater than 12 mph but less than 16 mph. The basis for this limit comes from the experience obtained during the RUST and IT Corporation silo mapping and sampling of the K-65 Silos respectively. The wind speed, direction, and potential wind fronts approaching the site shall be monitored by contact with the National Weather Service and local weather monitoring stations.

The Facility Owner is responsible for ensuring that the conditions of this LCO are met.

5.3 Temperature Limit for Operation of the RTS

This LCO applies to the PVC piping portions of the RTS. The objective is to reduce the possibility of a double-ended pipe break during RTS operation as a result of brittle failure of the PVC.

The RTS shall not be operated below ambient temperatures of 0 degrees F. The manufacturer has specified that the PVC is susceptible to failure at low ambient temperatures.

The ambient temperature shall be monitored prior to and during RTS operation.

5.4 Shielding of the RTS

This LCO applies to the shielding wall which surrounds the RTS building. The objective is to ensure the integrity of the shield wall. The shield wall reduces the external gamma dose rate to acceptable levels just outside the RTS building.

The continuity of the shield wall shall be inspected to ensure that the wall has no cracks, gaps, missing shielding material, or other abnormal condition of the shield wall.

The inspection of the shield wall shall take place prior to operation of the RTS.

5.5 Inspection of RTS Piping

This LCO applies to the piping, joints, and connections from the RTS to the silos. The objective is to prevent the initiation of operation of the RTS with the system integrity violated. This LCO reduces the possibility of operating the RTS while a breach of system integrity exists.

Immediately prior to operating the RTS, the PVC piping, joints, and connections between the K-65 Silos and the RTS shall be visually inspected for cracks, breaks, or potential leaks. In addition, the piping shall be frisked for alpha contamination to ensure that there are no leaks.

5.6 Silo Dome Surface Dose Rate Limits

The K-65 RTS shall be operated to reduce the total radon inventory in the silo head spaces prior to the removal of the manhole covers. The RTS shall be operated until the surface radiation at the silo dome is less than 75 mR/hr. When the surface radiation dose rate exceeds 100 mrem/hr due to the generation of radon from the residue, operations involving personnel on the silo dome are to be suspended.

To ensure that the target radon reduction in the K-65 silos is achieved during operation of the RTS, at least two calibrated gamma-specific radiation meters reading in units of mR/hr shall be placed on the silo surface. These instruments will be monitored during system operation involving personnel on the silo dome.

To ensure that the surface radiation on the K-65 silo surfaces never exceeds the maximum allowable surface radiation, at least two gamma-specific radiation meters reading in units of mR/hr shall be available for monitoring of the silo surface during operations.

The radium in the K-65 silo residue continuously generates radon gas. The normal equilibrium quantity of radon gas in the head spaces is about 33 Ci. This inventory of radon gas results in direct gamma

radiation at the surface of the domes from radon and decay daughters. Moreover, the K-65 Silos are not containment structures, and radon gas has some access to the ambient atmosphere. Therefore, operators on the K-65 Silos without externally supplied air sources (airline or SCBA) will be exposed to elevated concentrations of airborne radon gas. Operation of the RTS will reduce the radon inventory in the silo head spaces during this operation to less than 4 Curies (equivalent to a radiation of 75 mR/hr at the silo surface). The radon reduction in the dome head space is effective in reducing direct gamma exposure from the silo radon inventory and the radon gas concentration in the ambient atmosphere above the silos.

5.7 Personnel Protective Device Requirements

Operators on the surface of the K-65 Silos shall wear airline supplied or SCBA full-face respiratory protection and anti-contamination clothing to provide protection from residual radon and decay daughters remaining in the silo head spaces after operation of the RTS. Although the bag-in/bag-out procedures maintain isolation of the head space from the atmosphere, some exchange of limited amounts of silo gas will occur when removing materials from these bags. Maintenance of operator protection and prevention of operator inhalation of this radon-enriched gas is provided by the use of airline or SCBA respiratory protection appropriate for the conditions encountered. Anti-contamination clothing is used at the FEMP whenever any potential contaminated surfaces can be encountered.

5.8 Gamma Radiation Monitoring

At least two operable gamma-specific radiation detectors shall be used to monitor silo surface radiation. In the event of failure of either detector, personnel shall be removed from the dome until two operable detectors are available.

5.9 RTS Area Monitoring

The RTS area shall be monitored by at least two operable instruments that can determine radon concentration with a relatively short sample dead time (< 20 minutes). Appropriate respiratory protection shall be used based upon this detected radon working level (WL). The appropriate respiratory protection is 0 to 0.075 WL, no respiratory protection required; 0.075 to 16.5 WL, full-face air purifying respirator; 16.5 to 600 WL, full-face supplied-air respirator; >600 WL, SCBA required. If radon WL are above 600 WL, the RTS shall not be operated, and the RTS area evacuated. If the radon monitors indicate a sudden increase in radon WL, the RTS is to be shut down and isolated from the K-65 Silos.

5.10 RTS Valve Operability Check

The RTS valves are enclosed in the shielded area. The valves shall be opened and closed by the remote actuation rods prior to each start-up to ensure operability of the RTS.

5.11 Guide Wires Required for Platform and Sprayhead Stability

The objective of the LCO is to prevent lateral forces, due to the swaying of the sprayhead assembly, from being applied to the silo dome manway. It has been determined that the center 20-foot radius of the silos lacks structural integrity and cannot support any loading. This LCO is to prevent a partial dome collapse due to direct contact of the sprayhead with the silo manway.

The distributor/sprayhead assembly and platform requires at least one guide wire attached to each corner of the distributor/sprayhead assembly and platform. The guide wires will stabilize the assembly and control any lateral movement while placing the sprayhead through the center manway and while it is in place.

The guide cable and deadman used to anchor the sprayhead assembly are to be inspected daily, prior to the shift, to ensure that there is no visible damage.

5.12 Slurry Pump Over-Pressure Protection

The slurry pump is a positive displacement pump and requires over-pressure protection to prevent system damage. The slurry pump must have at least one form of passive over-pressure protection established prior to being placed in operation. The slurry pump has been designed and provided with a pressure switch to shut off the pump due to over-pressure conditions.

The operability of this pressure switch shall be tested during the initial start-up operational testing of the system.

5.13 Limiting Condition for Operations for the Plastic Containment Bag

This LCO applies to the plastic containment bag used to bag-in-bag-out for access to the open manhole. The objective of this LCO is to prevent a possible failure of the containment bag due to low ambient temperatures.

The minimum acceptable temperature for operations involving the use of the plastic containment bag is 20 degrees F. The maximum acceptable temperature for operations involving the use of the plastic containment bag is 100 degrees F.

The Facility Owner is responsible for ensuring that the plastic bag is capable of performing its function in the above range.

In addition, the Facility Owner is responsible for monitoring the ambient air temperature during operations to ensure that the LCO is not exceeded.

6.0 DESIGN FEATURES

The K-65 silos have been provided with the following design features to reduce the radiation exposure:

1) The RTS is provided to reduce the surface dose rate and radon concentration by filtering the radon from the silo dome head space of one silo at a time.

2) Additional radiation shielding has been provided by the construction of the berms surrounding the K-65 Silos.

3) The protective cover over the center 20-foot section of each silo protects the silos from additional degradation due to further weathering. In addition, the foam cover reduces the radon release to the environment by limiting the diurnal release.

The RTS is provided with the design feature of 32-inch-thick concrete shields surrounding the RTS building. The shielding reduces the external gamma dose rate from the RTS.

7.0 SURVEILLANCE REQUIREMENTS

7.1 Self-Reading Pocket Dosimeter

Individual self-reading pocket dosimeters are to be worn by all individuals involved with the silo removal action and RTS operation.

1) The SRPDs shall be read every 2 hours and zeroed daily.

2) The gamma radiation exposure indicated by the end-of-day reading of the SRPD for an individual shall be recorded.

3) The cumulative radiation exposure record for all individuals, as indicated by the SRPD, shall be compiled on an annual, quarterly, monthly, and weekly basis.

7.2 Individual Thermoluminescent Dosimetry Badges

Individual thermoluminescent dosimetry (TLD) badges shall be analyzed monthly unless the SRPD indicates that in individual's exposure is approaching the radiation exposure threshold (80 percent exposure guidelines listed in the Radiation Control Manual). In this event, a special reading of the TLD will be performed as a confirmation of the radiation exposure indicated by the SRPD.

7.3 RTS Record Requirements

Whenever the RTS is operated, the date, time, ambient temperature, and duration of system operation shall be recorded.

7.4 RTS Gamma Detector Requirements

At least two gamma-specific radiation detectors shall be used for continuous monitoring of the radiation at the silo surface during the operation of the RTS and for bi-hourly monitoring of the radiation at the silo surface during all operations. These detectors shall have an up-to-date calibration and a traceable calibration scale check that is not more than 1 month (30 days) old at the start of operations.

7.5 K-65 Silos Operational Respirator Requirements

All personnel involved with the K-65 Silos during any operation in the waste pit area shall wear appropriate respiratory protection, based upon the best available local radon monitor. Personnel shall have been medically approved to use respirators, respirator trained, and respirator fit-tested within the last 12 months. Personnel shall be issued appropriate respirators at the start of each shift.

7.6 Working Level Monitoring Requirements

The local working level shall be monitored by instruments and a Radiation Technician on a semi-continuous basis (< 20 minutes).

7.7 Meteorological Monitoring

Meteorological conditions including ambient temperature, wind speed, and forecasts shall be monitored by contact with the National Weather Service and local weather stations.

7.8 Continued Radon Monitoring in the Silo Domes

The effectiveness of the bentonite attenuation layer will be monitored following the removal action, until such time as the United States Environmental Protection Agency (US EPA) and the United States Department of Energy (DOE) agree that the removal action was successful in mitigating the hazard of the normal radon release.

The measurement will take place inside the silo domes using the radon measurement equipment installed during this project.

8.0 ADMINISTRATIVE REQUIREMENTS FOR SAFETY

The purpose of this section is to describe the administrative requirements associated with the bentonite system operation.

8.1 General Administrative Controls

The following administrative controls must be followed during the removal action:

1) No personnel are allowed on the platform while the crane is being moved. The objective is to minimize the possibility of personnel injury. The basis of the control is stated in the Final Safety Assessment, Section 9.1.2.

2) The air displaced from the silos due to the bentonite addition shall be discharged by operating the RTS vacuum pump. The basis for this requirement is to minimize the radon release to the environment due to the volume of air displaced by the incoming bentonite slurry.

3) The bentonite system shall be inspected prior to each period of operation and prior to operation following any down time. The valve position, pump operation, and mixer operations shall be verified. No crane operations shall take place above the silos except in support of the bentonite system operation. The crane cannot operate with loads other than the structural main basket and associated equipment.

5) Access and maintenance activities for the silo dome(s) must be performed in accordance with the DOE's policy for maintaining personnel exposures ALARA per DOE Order 5480.11 and the site policy FMPC-2084 "Radiological Controls Manual." Administrative controls may include ALARA plans, access restrictions, and/or maintenance procedures. The administrative controls associated with the K-65 Silos include the conduct of operations in accordance with the requirements of Chapter 12. In addition, the RTS shall be operated in accordance with

"Radiological Requirements for Operation of the K-65 Radon Treatment Facility," SP-P-35-040 Rev. 1.

6) The operation, maintenance, and access of the RTS must be consistent with the DOE's policy for maintaining personnel exposures ALARA per DOE Order 5480.11 and the site policy FMPC-2084 "Radiological Controls Manual."

7) The contents of the silo shall not be changed such that the results of the hazard classification are made invalid. The quantity and form of the K-65 residues shall not be altered in place such that an increase in the hazard level occurs.

8) No personnel shall enter the K-65 Silos.

9) Administrative controls for the facility are (1) to restrict operator exposure using TLDs and SRPDs to monitor individual whole body doses, (2) to require operation of the Radon Treatment System to reduce the radon inventory in the K-65 Silos, and (3) to restrict personnel access to the K-65 fenced area. None of these requirements is controlled by a measuring instrument connected to an automatic mitigating control system, so human intervention is required; and, therefore, the monitoring actions and mitigating response is an administrative control.

10) Administrative action in the event of an OSR violation will be reported in accordance with DOE 5500.3 and FMPC-4006 "Occurrence Reports."

11) Due to the uncertainty associated with loads imposed on the silo structure following the addition of bentonite, no personnel shall be permitted on the silo dome until the dome has been inspected to determine the stability of the structure. This inspection shall be by direct visual observations of the dome exterior and/or CCTV observation of the inside of the dome shell.

12) No personnel are to occupy the platform during pumping operations.

13) Personnel restraint devices shall be worn while on the suspended platform.

8.2 Organizational Responsibility

WEMCO, as Facility Owner, is responsible for the activities associated with the K-65 Silos and RTS. The WEMCO OU-4 Manager has overall responsibility for ensuring compliance and surveillance of the OSRs.

The organizational and individual responsibilities for this project are shown in Figure 8-1. Westinghouse Environmental Management Project (WEMCO) is responsible for the operation of the RTS and for providing Radiation Safety Technicians (RSTs).

RUST Engineering is to provide construction and operations support for the bentonite system.

PARSONS is to provide architecture/engineering support in the design of the bentonite system.

American Colloid is to provide technical support in the operation of the bentonite mixing/delivery system.

8.3 Minimum Staff Requirements

The minimum staff required for safety during the bentonite system operation is six. The minimum staff consists of one crane spotter; one crane operator; three bentonite system operators; one Radiation Safety Technician; and one supervisor.

The minimum number of personnel for the operation of the RTS is two, consisting of one RTS system operator and one Radiation Safety Technician to watch the WL monitors and the gamma radiation on the surface of the silo domes.

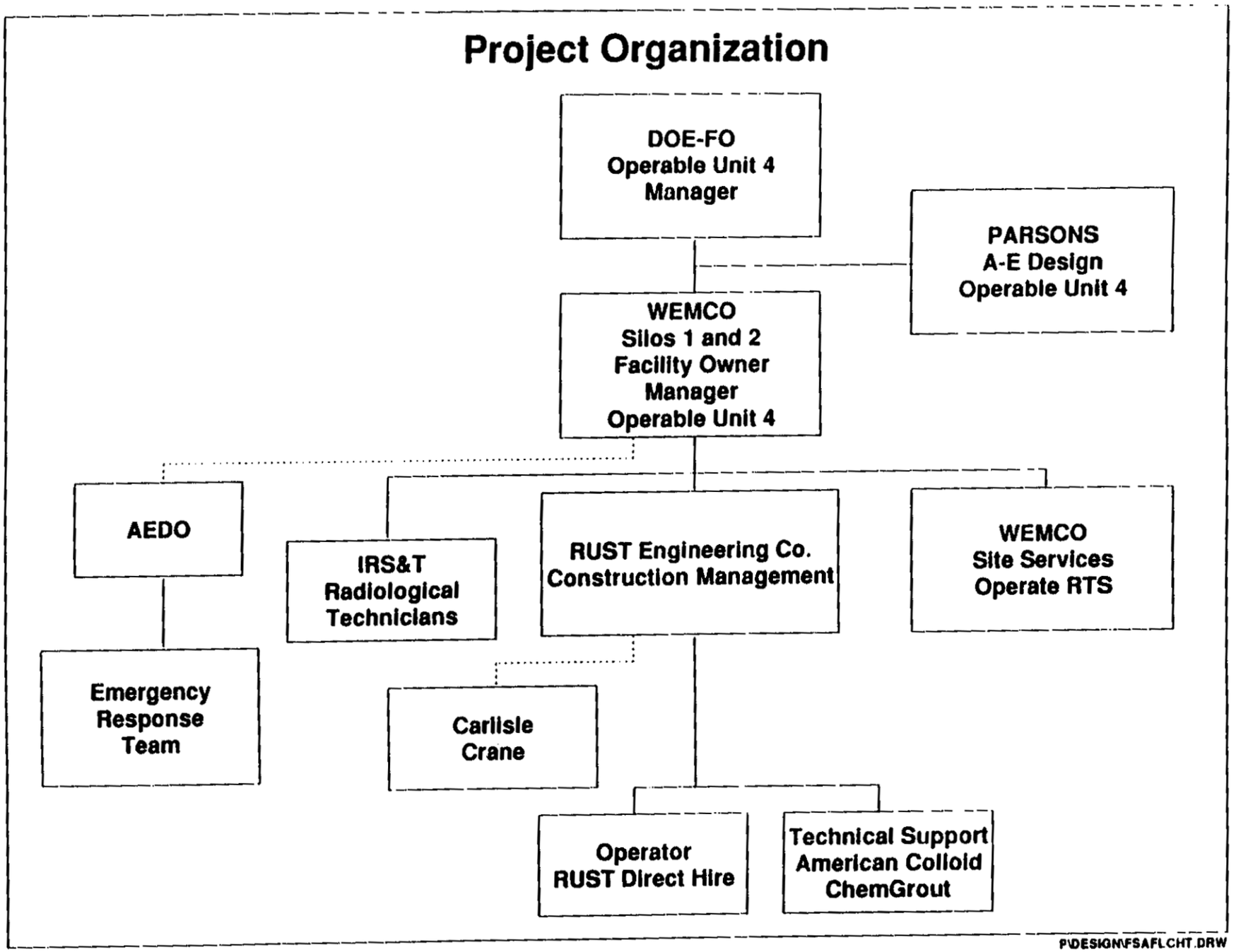

Figure 8-1 - Organizational Chart

8.4 Training and Retraining

All personnel are required to be trained in accordance with OSHA 29 CFR 1910.120; WEMCO Radiation Worker Training; Respirator Training; OSR requirements, and project-specific orientation describing the job, purpose, and hazards. Training is to include how to handle emergencies according to "FMPC K-65 Silo Numbers 1 and 2 Area Emergencies" (SOP) 65-C-201.

8.5 Review and Audit Requirements

This OSR shall be reviewed by the Independent Safety Review Committee (ISRC). Field operations may undergo surveillance by WEMCO IRS&T and Quality Assurance at any time for compliance with this OSR.

Changes which may affect the design features, safety limits, or limiting conditions for safety are required to be fully reviewed by WEMCO management and the WEMCO ISRC prior to implementation.

Final review and approval of the OSR is accomplished by project line management, followed by recommendation for approval by the WEMCO ISRC, with final approval by the DOE site manager.

8.6 Actions Required if a Safety Limit or LCO Is Exceeded

If an SL is exceeded at any time, operations are to cease immediately upon notice. Immediate actions are to be taken to mitigate the condition and to prevent the possibility of a silo dome failure.

If an SL is exceeded, the bentonite mixing/delivery system is to be shut down and the main basket is to be removed from over the silo.

If an LCO is exceeded, correct the condition to return the LCO parameter to within the operating range prior to continued operations.

Administrative action in the event of an OSR violation will be reported in accordance with DOE 5500.3 and FMPC-4006 "Occurrence Reports."

8.7 Record Keeping and Reporting Requirements

Safety related records and logs will be retained as required under Section XXVII of the DOE/US EPA Consent Agreement (dated April 1990). Records which are not subject to retention requirements of the Consent Agreement will be retained for a minimum of 5 years following the project completion.

Record keeping and reporting requirements include safety related records and logs, which will be prepared in regard to the following items. These records and logs will be kept for a minimum of 5 years past the completion of the removal action.

1) Tests and maintenance of the instrumentation monitoring operator exposure and the RTS equipment

2) Training logs for personnel

3) Violations of safety limits, limiting conditions of operation, or administrative controls

4) Any incidents and investigations associated with safety limits, limiting conditions for operation, administrative controls, or other OSR violations.

8.8 Emergency Planning

Emergency planning and preparedness will be in accordance with "FMPC Emergency Plan," FMPC-2046 and "FMPC K-65 Silo Numbers 1 and 2 Area Emergencies" (SOP) 65-C-201. An emergency preparedness drill has been conducted. In the case of an actual emergency, the Emergency Plan will be activated in accordance with FMPC-2046. The worst-case accident of a silo collapse is included in the SOP 65-C-201. This potential accident has been determined to be a "General Emergency" in FMPC-2046 and, as such, would initiate the following emergency actions, as appropriate:

1) On-site Protective Actions
   - (1) Shelter on site except evacuate within danger area, if possible
   - (2) Implement RCRA contingency plan for hazardous waste
   - (3) Personnel accountability
   - (4) Bioassay at termination

2) Off-site Protective Actions
   - (1) Activate off-site warning system
   - (2) Issue Protective Action Recommendations to county governmental agencies
   - (3) Implement RCRA contingency plan for hazardous waste

3) Event Mitigation Actions
   - (1) Contain event
   - (2) Isolate area
   - (3) Terminate release
   - (4) Monitor on site and off site

(5) Cleanup

4) Response Groups Activated

(1) Duty officer

(2) Emergency Operations Center (EOC)

(3) Joint Public Information Center (JPIC) (consider)

(4) Mutual aid (if needed)

(5) Monitoring teams

(6) Emergency Response Team (ERT) (auto recall)

(7) Medical

(8) Staging area

(9) Security (auto recall)